

ABSTRACT OF THE DISCLOSURE

An apparatus and method for charging a gas storage and dispensing vessel with gas to a predetermined pressure level, e.g., a gas to be employed in a semiconductor manufacturing operation such as a hydride, halide or organometallic reagent gas. In the gas charging, a source gas is liquefied, e.g., in a cryotrap, and then gasified in closed flow communication with the vessel to introduce the gas thereinto, and such liquefaction/gasification steps are carried out alternatively and repetitively, to charge the vessel in a step-wise, progressive fashion with gas, until a full fill state is achieved, with the contained gas at the predetermined pressure level.